AMENDMENTS TO THE CLAIMS

1. (currently amended) A digital time domain reflectometer system, comprising:

a launch controller periodically:

generating a sync signal for transitioning a duration signal to an "on" state, the sync signal starting a counter;

waiting a known delay time after generating the sync signal; and

generating a launch signal ~~on a cable~~ ~~after waiting~~ responsive to the expiration of the known delay;

a detection circuit:

detecting that the launch signal has bounced back using an adapted threshold; and

transitioning, responsive to detecting the bounced launch signal, the duration signal to an "off" state to stop the counter;

an oscillator providing a clock signal having a time base that is unrelated to the timing of the launch signal;

~~a~~ the counter for counting the number of clock signals received while the duration signal is in the "on" state; and

a controller:

compensating for the additional clock signals received on account of the known delay time; and

calculating a cable length.

2. (original) The digital time domain reflectometer system of claim 1, further including the steps of:

adjusting a threshold voltage to a plurality of voltage levels;

taking duration measurements at each voltage level;

aggregating the duration measurements and generating a set of measurements;

determining, using the set of measurements, a voltage level at an inflection point in the bounced launch signal; and

using the determined voltage level as the adapted threshold value.

3. (original) The digital time domain reflectometer system of claim 2, wherein the set of measurements is used to determine if the cable has an open condition or a short condition.

4. (original) The digital time domain reflectometer system of claim 1, wherein the counter is constructed to have 12 or fewer bits.

5. (original) The digital time domain reflectometer system of claim 1, wherein the counter is constructed to have 8 bits.

6. (original) The digital time domain reflectometer system of claim 1, wherein the oscillator is constructed to provide a clock signal slower than about 50 MHz.

7. (original) The digital time domain reflectometer system of claim 1, wherein the oscillator is constructed to provide a clock signal at about 10 MHz.

8. (original) The digital time domain reflectometer system of claim 1, wherein the launch controller is constructed to generate the sync signal about every 40 micro seconds.

9. (original) The digital time domain reflectometer system of claim 1, wherein the counter is constructed to count the number of clock signals received in each one of multiple signal durations; and the controller performs the additional step of aggregating the count results for the multiple counts.

10. (original) The digital time domain reflectometer system of claim 1, wherein the counter is constructed to count the number of clock signals received in each one of thousands of signal durations; and the controller performs the additional step of aggregating the count results for the thousands of counts.

11. (Currently amended) A method of calculating cable length, comprising:

providing a low frequency clock signal and an adapted threshold;

performing a measurement cycle, comprising:

starting a duration measurement using a clock that is independent from the low frequency clock signal;

providing a duration signal having a duration indicative of the cable length, the duration signal being turned off responsive to comparing the adapted threshold to a bounced signal;

counting the number of clock pulses received during the duration that the duration signal is on,;

repeating the measurement cycle more than about 1000 times;

averaging the results from the measurement cycles; and

calculating, using the average results, a cable length.

12. (previously presented) The method according to claim 11 further including repeating the measurement cycle about 25 thousands~~-of~~ times.

13. (original) The method according to claim 11 wherein the counting step includes counting from 0 to a maximum of 255.

14. (original) The method according to claim 11 wherein the counting step includes counting using a Gray code.

15. (original) The method according to claim 11 wherein the counting step includes counting using a modified Gray code, the modified Grey code allowing a maximum two-bit transition.

16. (original) The method according to claim 11, further including setting the adaptive threshold by:

setting a threshold to a first threshold value, performing several measurement cycles using the threshold, and storing the measurement result in a set;

incrementing the threshold to a next threshold value, performing several measurement cycles using the threshold, and storing the measurement result in the set;

repeating the incrementing step through a range of threshold values; and

using the set of measurement results to set the value for the adapted threshold.

17. (original) The method according to claim 16, further including the step of setting the adaptive threshold by finding an inflection point in the set of measurements.

18. (original) The method according to claim 16, further including the step of setting the adaptive threshold by using the set of measurements to determine if the cable has a short condition or an open condition.

original

19. (currently amended) A method of reducing the effects of dead zone in a time domain reflectometer, comprising:

turning a duration signal to an "on" state <u>using a first clock</u>;

waiting a known delay time after turning on the duration signal;

launching a launch signal on to a cable after the known delay time;

detecting a bounced signal;

transitioning the duration signal to an "off" state using an adapted threshold;

measuring the duration that the duration signal was in the "on" state <u>using a clock that is unrelated to the first clock</u>;

compensating the duration signal for the known delay time; and

calculating a length using the compensated duration signal.